

Appl. No. : 10/518,437
Filed : December 16, 2004

REMARKS

In response to the Office Action mailed January 11, 2007, Applicant has amended the application as above. No new matter is added by the amendments as discussed below. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the remarks set forth below.

Discussion of Claim Amendments

Claims 3-5 have been cancelled. Claims 1 and 6-8 have been amended. Claim 12-15 have been added. Upon the entry of the amendments, Claims 1, 2 and 6-15 are pending in this application. The amendments to Claim 1 are supported, for example, by the specification at page 15, lines 5-21, page 39, line 23 through page 40, line 8, and Figure 10. The amendments to Claim 8 are supported, for example, by the specification at page 39, line 23 through page 40, line 8, and Figure 10. The amendments to Claims 6 and 7 are merely for clarification and do not narrow the scope of protection. New Claims 12, 13 and 15 are supported, for example, by the specification at page 39, line 23 through page 40, line 8, and Figure 10. New Claim 14 is supported, for example, by the specification at page 45, lines 13-18. Thus, the amendments to the claims do not introduce any new matter. Entry of the amendments is respectfully requested.

Discussion of Specification Objection

The Examiner objected to the specification as the abstract contains more than 150 words. In reply, the abstract has been amended accordingly. Withdrawal of the objection is respectfully requested.

Discussion of Patentability of Pending Claims

Claims 1 and 8 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 2,771,637 to Silvasy, et al. (hereinafter "Silvasy"). Claim 1 was rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,406,752 to Vinson (hereinafter "Vinson"). Claims 2 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either Silvasy or Vinson. Claims 5 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either Silvasy or Vinson in view of U.S. Patent No. 5,453,238 to Bardy

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(hereinafter "Bardy"). Applicant respectfully submits that pending Claims 1-2 and 6-11 are allowable over the prior art of record as discussed below.

Rationales of 35 U.S.C. §§ 102 and 103

"For a prior art reference to anticipate a claim under 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.ed 675, 677, 7 USPQ 2d 1315, 1317 (Fed. Cir. 1988). Furthermore, in order to provide a *prima facie* showing of obviousness under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested by the prior art. *See, e.g., In re Royka*, 490 F. 2d 981, 180 U.S.P.Q. 580 (CCPA 1974); MPEP 2143.03.

Discussion of Patentability of Independent Claim 1

Independent Claim 1, as amended, recites, among other things, (a) the downstream side of the discharge portion is *configured in such a manner that* when the molten resin discharged from the discharged portion is released, *the pressure is reduced, resulting in expansion of the molten resin* and (b) the two rotatable bodies, whose *temperatures can be controlled by a temperature regulator*, can rotate in the molten resin discharging direction. Applicant respectfully submits that none of the prior art references disclose or teach the above-indicated features of the claimed invention as discussed below.

1. Discussion of Patentability over Silvasy

Silvasy does not disclose or teach the above feature (a) of the claimed invention. The Silvasy reference discloses that friction plates (20) are disposed downstream of a pair of rolls (17). A gap between the plates (20) has the same width as that of the rolls (17). *See Figure 3*. Thus, the prior art reference cannot, and does not, teach that the downstream side of the discharge portion is configured in such a manner that when the molten resin discharged from the discharged portion is released, *the pressure is reduced, resulting in expansion of the molten*

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resin. For example as is seen in Figure 10 of this application, the molten resin expands subsequent to passing the rotatable bodies.

Additionally, Applicant notes that making foam-formed products with the Silvasy device results in poor quality because it is difficult to generate foam in the molten resin which is discharged from the pair of rolls (17) to the gap between the friction plates (20).

Furthermore, Applicant respectfully submits that there is no motivation to modify the Silvasy reference so as to arrive at the claimed invention. Applicant would like to remind the Examiner that if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *See MPEP. 2143.01*. Silvasy produces a continuous sheet and strip from metallic powder. An object of the Silvasy device is to increase the density of the powdered metal. *See column 1, lines 19-21*. In order to increase density, Silvasy uses the retarding action of the friction plates (20). If the friction plates (20) were modified to have a larger gap than that of the rolls (17), the retarding action of friction plates (20) cannot be obtained. Such a modification would render the Silvasy device inoperable for its intended purpose. Thus, Applicant respectfully submits that there is no motivation or reason to modify the Silvasy reference so as to arrive at the claimed invention.

Silvasy neither discloses nor teaches the above feature (b) of the claimed invention associated with the temperature controller. As discussed above, Silvasy does not produce foam-formed products but produces continuous sheets and strips from metallic powder. Therefore, the Silvasy apparatus does not need to control the temperature of the rolls (17) let alone it does not, in fact, control the temperature thereof. In view of the above, Applicant respectfully submits that independent Claim 1, as amended, is allowable over Silvasy.

2. Discussion of Patentability over Vinson

Vinson does not disclose or teach the above feature (a) of the claimed invention. Vinson discloses the gap between dynamic flow inducers (50) and the height of the downstream passage cross-section are substantially equal. *See, for example, column 6, lines 1-3 and Figure 8*. Thus, the Vinson reference cannot, and does not, teach that the downstream side of the discharge portion is configured in such a manner that when the molten resin discharged from the

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discharged portion is released, *the pressure is reduced, resulting in expansion of the molten resin* (see, for example, Figure 10 of this application).

Additionally, Applicant notes that since the molten resin has a high viscosity, friction is generated in the downstream passage cross-section of the dynamic flow inducers (50) causing heat generation, it is almost impossible or very difficult to produce appropriate foam-formed products with the Vinson device.

Furthermore, Vinson neither discloses nor teaches “the two rotatable bodies whose temperatures can be controlled by a temperature regulator.” First of all, the Vinson device does not control the temperature of the rollers (50). Furthermore, Applicant respectfully submits that there is no motivation to modify the Vinson reference so as to arrive at the claimed invention. In Vinson, the wall defining the upstream passage cross-section of the dynamic flow inducer (50) and the wall defining the downstream passage cross-section of the dynamic flow inducer (50) are formed in a unified manner. Therefore, the heat of the upstream wall transfers to the downstream wall. There is no point in trying to control the temperature of the dynamic flow inducer (50). In view of the above, Applicant respectfully submits that independent Claim 1, as amended, is allowable over Vinson.

3. Discussion of Patentability over Bardy

Applicant notes that Bardy was not used to reject independent Claim 1. Nonetheless, Applicant would like to point out that Bardy does not disclose or teach the above-recited features of independent Claim 1 as discussed below. In Bardy, two rollers (7, 8) merely superimpose a first rubber mix (1) and a second rubber mix (2). These two rollers (7, 8) do not narrow the end of the passage. *See Figure 1*. Thus, Bardy does not, and cannot, disclose or teach that the downstream side of the discharge portion is configured in such a manner that when the molten resin discharged from the discharged portion is released, *the pressure is reduced, resulting in expansion of the molten resin* (see, for example, Figure 10 of this application).

Furthermore, Applicant respectfully submits that Bardy does not disclose the temperature regulator associated feature of the claimed invention. In view of the above, Applicant respectfully submits that independent Claim 1, as amended, is allowable over Bardy.

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4. Discussion of Patentability over Nalle and Nodono

The Examiner has also asserted that U.S. Patent 3,394,431 to Nalle, Jr. (hereinafter "Nalle") and U.S. Patent 6,685,460 to Nodono, et al. (hereinafter "Nodono"), not relied upon for the rejections, are cited as of interest to show the state of the art. Applicant respectfully submits that neither Nalle nor Nodono discloses or teaches the above-indicated features of the claimed invention. In view of the above, Applicant respectfully submits that independent Claim 1, as amended, is allowable over Nalle and Nodono.

5. Summary

According to one embodiment of the claimed invention, numerous cells are generated and allowed to grow in the molten resin to produce foam-formed products (*see, for example, the specification of this application at page 15, lines 17-21*). Furthermore, the temperature of molten resin can be precisely controlled, a resin with a narrow range of suitable foaming temperatures can be readily foamed, and minute and high-quality foam cells can be formed (*see, for example, the specification of this application at page 17, lines 17-20*). In view of the above, Applicant respectfully submits that independent Claim 1, as amended, is allowable over the prior art of record.

Discussion of Patentability of Dependent Claims 2 and 6-8

Claims 2 and 6-8 depend from base Claim 1, and further define additional technical features of the present invention. In view of the patentability of their base claim, and in further view of their additional technical features, Applicant respectfully submits that the dependent claims are patentable over the prior art of record.

Discussion of Rejoinder for Dependent Claims 9-11

Claims 9-11 depend from base Claim 1, and further define additional technical features of the present invention. Pursuant to MPEP § 821.04(b), Applicant respectfully requests that method Claims 9-11 be rejoined to the application upon allowance of the base Claim 1.

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Discussion of Patentability of New Claims

New Claims 12-15 includes all of the features of Claim 8, and further define additional technical features of the present invention. In view of the patentability of their base claim, and in further view of their additional technical features, Applicant respectfully submits that the new claims are patentable over the prior art of record.

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CONCLUSION

In view of Applicant's foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,

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